

Chapter 5

System Supplies

This chapter provides guidance for describing and quantifying the sources of water available to the retail urban water supplier, including supplies from wholesalers, surface water, groundwater, recycled water, desalinated water, transfers and exchanges.

For each water source, provide a narrative description that may include a discussion of the origin of the water supply, water quality or quantity issues, and any actions or projects that are anticipated to meet future water demands.

In this section water suppliers should also consider briefly addressing possible future constraints on water supplies, such as declining groundwater levels, sea level rise, or diminishing snow pack. The reliability of these supplies will be more thoroughly addressed in another section of the Guidebook, Chapter 6, Water Supply Reliability.

5.1 Summary of Existing and Planned Sources of Water

CWC 10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision 10631(a).

(4). (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Using Table 5-1, provide the volumes of current and projected water supply by source.

DISCUSSION POINT: The total volume of a water right or allocation is often not available to the water agency. Including the volume of the water right can be misleading if they seldom receive the full amount. Other agencies may have a greater water right than they use. What should the guidance be on projected water supply?

Note: For purposes of the UWMP, water conservation is not classified as a source of water, but should be reflected as a decrease in demand.

Table 5-1: Water supplies* — current and projected							
Drop Down Menu – may use each category multiple times	Detail	2015	2020	2025	2030	2035	2040
Wholesaler **	<i>(Dropdown list with Wholesaler Names)</i>						
Supplier-produced groundwater	<i>(Dropdown list with basin names)</i>						
Supplier-produced surface water							
Recycled Water							
Desalinated Water							
Transfers In							
Exchanges In*							
Stormwater Re-Use							
Other							
	Total	0	0	0	0	0	0

*POINT OF DISCUSSION – For purposes of simplicity, this may change so that only exchanges resulting in a net increase of supply are reported.

**POINT OF DISCUSSION – Are there situations where a retailer would purchase water from an entity that is not a wholesaler and these are not considered Transfers or Exchanges?

5.2 Wholesale Supplies

Retailers that receive water from a wholesale supplier are required to exchange information with their wholesaler(s) regarding expected supplies from the wholesaler(s) and expected demand from the retailer. See Chapter 1, 1.3 Regional Planning. This information should be used when completing Table 5-1.

The retailer may include a brief summary of the wholesale water supply's origin and a reference to the wholesaler's UWMP for more detailed discussion of that particular water supply.

5.3 Supplier Produced Groundwater

Only an agency that pumps groundwater, or expects to pump groundwater, must address the requirements in this section. An agency that uses groundwater that was pumped by another agency should address this water source as a supply from a wholesaler.

Groundwater management requirements are covered in detail in Section 10750 of the CWC and more information can be found at DWR Groundwater Information Center website (<http://www.water.ca.gov/groundwater/>) and the Sustainable Groundwater Management Website COMING SOON. In the UWMP, there is no need to duplicate the detail that addresses these other requirements.

The UWMP should provide an overview of the basin, an agency's reliance on the basin, basin management, and include or provide links to documents that have been developed specifically for groundwater management.

Basin Description

*CWC 10631 (b) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*

The description of the groundwater basin(s) should include the basin and sub-basin name(s). If an agency needs additional guidance identifying their groundwater basin, they may contact DWR regional staff ([link to contact information](#)).

The basin description may include a map of the basin, a list of other known users of the basin, a description of changes in groundwater levels, and a discussion of any known issues, including water quality, which may impact present or future use of groundwater.

The California Groundwater Update 2013 and California's Groundwater Update 2003, Bulletin 118 (available from <http://www.water.ca.gov/groundwater/>) may be used to provide background and general information for describing the basin(s).

Groundwater Management

CWC 10631 (b) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

- (1) A copy of any groundwater management plan adopted by the urban water supplier... or any other specific authorization for groundwater management.*
- (2) ...For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board.
A description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.*

Water agencies are encouraged to include a brief overview of the management of the groundwater basin, which may be taken from the Groundwater Management Plan (GWMP), or basin adjudication. If no GWMP or adjudication exists, include a brief discussion of current or planned basin management actions, if any.

If a groundwater management plan or basin adjudication decree exists, it must be included in the UWMP.

Overdraft Conditions

CWC 10631(b)(2).For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

Agencies drawing water from any unadjudicated basin must provide a detailed description of the efforts being undertaken to eliminate the long-term overdraft conditions. This may include discussion of the formation of sustainable groundwater agencies and activities such as groundwater level monitoring, metering or measuring groundwater pumping, groundwater recharge, conjunctive use programs, water conservation, or alternative water supplies. If these efforts are contained in another document, include the document as an appendix and provide a summary of these efforts in this section of the UWMP.

The most current official departmental bulletin that characterizes the condition of groundwater basins is California's Groundwater Update 2003, Bulletin 118 (available from <http://www.water.ca.gov/groundwater/>). POSSIBLE UPDATE IN 2015.

Historical Pumping

CWC 10631 (b) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

3) (Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Table 5-2: Groundwater — volume pumped

Basin and Sub-Basin name(s)	2011	2012	2013	2014	2015
Drop Down List From Bulletin 118					
Total groundwater pumped					

Water agencies that have pumped groundwater at any time during the years 2011-2015 are required to complete Table 5-2 with the volume of water pumped from each basin for each year within that time period.

Water agencies are also required to discuss the sufficiency of groundwater pumped for the last five years. This may be addressed by describing any limitations or challenges, if any, that were encountered in obtaining groundwater during this time.

5.4 Supplier Produced Surface Water

Water drawn from streams, lakes and reservoirs are considered surface water supplies. If a water agency uses, or plans to use, self-supplied surface water as part of its water supply, the volume of that supply will be included in Table 5-1.

Surface water that is not self-supplied, such as purchases from a wholesaler, transfers or exchanges, are addressed separately in Table 5-1.

The agency may choose to describe the surface water system in the UWMP. Such a description may include maps, an overview of the water conveyance system(s), the name of the surface water source (i.e., name of stream and/or reservoir), a brief description of the watershed that supplies the source, and a discussion of water rights to that source,

The water agency may also include the name(s) of any agency (ies) responsible for management of the water source, especially a reservoir, and include a link or appendix of any management plans for the surface water source.

5.5 Wastewater and Recycled Water

POINT OF DISCUSSION – Is recycled water better addressed as a stand-alone section? Information is needed for both supplies and demands.

Appendix YY provides additional, detailed information on wastewater and recycled water and how the information may be best presented in a water supplier's UWMP. It is requested that UWMP preparers review this appendix before completing the recycled water section of the UWMP.

Recycled water as a water supply has the ability to provide additional water resources that are both locally available and locally controlled. It has been safely reused in California for over 60 years and the state is currently reusing 669,000 AF annually (as of 2009) to meet water supply needs. Although this is a significant amount of water, there is potential to increase this amount and provide greater local water supply reliability.

There have not been any legislative changes to the UWMP legislation addressing recycled water since the preparation of the 2010 UWMPs. The only changes for 2015 UWMPs for recycled water data reporting are the data tables. Separate tables are now required for wastewater collection, wastewater treatment, and wastewater disposal in order to better account for wastewater management, especially if this process is managed by more than one agency.

DWR and the State Water Resources Control Board (SWRCB) are working cooperatively to assess statewide recycled water use and both agencies are seeking consistency between the recycled water data that is reported in UWMPs and in statewide recycled water surveys. Please see Appendix YY for additional discussion of this issue.

Definition

The term "recycled water" includes water that has had secondary or tertiary treatment. The regulation overseeing the recycling of municipal wastewater (Title 22) specifies what level of treatment is required for any particular use.

For purposes of the UWMP, recycled water is water that originates from a municipal treatment plant and has been treated to a level which enables it to be reused in a manner consistent with Title 22 and in accordance with Regional Water Quality Control Board's (RWQCB) National Pollutant Discharge Elimination System (NPDES) waste discharge and water recycling requirements. Recycled water does not include the reuse of agricultural runoff or the reuse of industrial or commercial wastewater not treated at a municipal treatment plant.

Coordinating Agencies

CWC 10633 Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

Every UWMP preparer, whether using recycled water within their service area or not, is to coordinate with local water, wastewater, groundwater, and planning agencies that operate within their service area. Other potential entities for coordination could include facilities that discharge effluent water or agencies that may be able to use recycled water.

Completion of Tables 5-3 and 5-4 will require coordination with these agencies.

The coordination can occur within the framework of an IRWM or other local or regional planning organization. The discussion should address the existing and potential availability and uses of recycled water within the service area.

Each of the coordinating agencies is to be identified in this subsection.

Wastewater Systems

CWC 10633 (a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

Identify the agencies collecting and/or treating the municipal wastewater from within the UWMP service area. Describe how those agencies interact (for example, one agency collects wastewater and delivers it to another agency for treatment).

Water agencies should also consider including information on any joint ventures or joint operations and whether there are any third-party organizations operating a facility under contract.

Table 5-3 summarizes wastewater collection within the service area. The water service area may have more than one wastewater collection agency.

If a wastewater collection agency collects additional wastewater from an area outside the water service area, the volume(s) reported in Table 5-3 should estimate of the volume of wastewater generated from within the urban water supplier's water service area ONLY.

DISCUSSION QUESTION - If receiving agency collects from several entities, what is a formula for estimating the wastewater generated from service area? If based on population, this addresses indoor use only, what if stormwater is included in the wastewater stream (combined sewer)?

Table 5-3: Wastewater Collection			
Wastewater collection agency	Name of third party contractor (if applicable)	Facility where water is treated <i>(If different from Collection Agency)</i>	Volume of Wastewater Collected from the Service Area 2015
<i>This table will be expandable to allow for entry of more than one agency.</i>			
Total Wastewater Collected from Service Area			

Table 5-4. The reported volumes should be the total amount of wastewater treated by the treatment agency. This may include wastewater from areas outside of the water service area.

Table 5-4: Wastewater Treatment		
Wastewater treatment agency	Name of third party contractor (if applicable)	Volume of Wastewater Treated By Treatment Agency 2015
Agency name		
<i>This table will be expandable to allow for entry of more than one agency.</i>		

CWC 10633 (b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Table 5-5 identifies the disposal, or non-beneficial use, of the treated wastewater from the treatment facility.

DISCUSSION ITEM: Use of the term “beneficial” or “non-beneficial” in regards to NPDES discharges to streams.

CWC 13050(f) "Beneficial uses" of the waters of the state that may be protected against quality degradation include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

Table 5-5: Disposal and Discharge of Treated Wastewater by Treatment Facility										
Name of Treatment Facility	Wastewater Discharge ID Number	Discharge Location Name or Identifier	Method of disposal	Treatment Level	2015	2020 <i>optional</i>	2025 <i>optional</i>	2030 <i>optional</i>	2035 <i>optional</i>	2040 <i>optional</i>
			Drop Down Menu							
Total					0	0	0	0	0	0

Table 5-6 identifies the beneficial uses of treated wastewater from the treatment facility.

Table 5-6: Beneficial Use of Treated Wastewater by Treatment Facility									
Name of Treatment Facility	Beneficial Use	Other Agency Beneficially Using this Treated Wastewater	Treatment Level	VOLUMES					
				2015	2020 <i>optional</i>	2025 <i>optional</i>	2030 <i>optional</i>	2035 <i>optional</i>	2040 <i>optional</i>
	Drop Down Menu								
Total					0	0	0	0	0

Recycled Water Uses within Water Service Area

CWC 10633(c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

CWC 10633(d) (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses .

CWC 10633(e) (Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years...

This section provides an overview of current and projected use of recycled water within the service area of the urban waters supplier.

Agencies that use or plan to use recycled water are required to provide a description of the recycled water system in the service area. This description may include identification of each agency involved in the recycled water system (collection, treatment, and distribution) including wholesalers, retailers, special districts, or joint ventures. Consider providing information on the system's history and operation and a map of the recycled water distribution system.

This is a good opportunity to highlight innovative uses of recycled water or a particular organization that has demonstrated commitment to the use of recycled water.

Every water agency that submits a UWMP is required to assess potential uses of recycled water, whether or not it is currently being used in the service area. Provide a summary of planned future projects, including technical and economic feasibility, and the potential for the projects to be implemented.

If recycled water is not planned to be implemented anywhere within the UWMP area within the planning horizon of the UWMP, please provide discussion of the issues constraining its implementation.

Complete Table 5-7 by quantifying the amount of recycled water for each beneficial use that is currently being used within the urban water supplier's service area, as well as projected volumes and uses into the future. These reported volumes should be consistent with those reported in Table 5-1.

Included uses of the recycled water must provide a benefit, which can range from irrigation of pastureland for cattle grazing to groundwater recharge to supplement water supplies. Appendix YY provides additional discussion of how recycled water should be quantified for this table and discusses common errors in evaluating recycled water volume and uses. Please refer to Appendix YY before completing this table.

DISCUSSION POINTS:

Are Groundwater Recharge and Indirect Potable Reuse the same?

Is discharge to a stream considered Wildlife Habitat?

Table 5-7: Recycled Water - Current and Projected Uses Within Service Area								
Name of Agency Providing Recycled Water	Use Within Service Area Drop Down Menu	Level of Treatment	2015	2020	2025	2030	2035	2040 - opt
	Agricultural irrigation							
	Landscape irrigation							
	Commercial irrigation							
	Golf course irrigation							
	Wildlife habitat							
	Wetlands							
	Industrial reuse							
	Groundwater recharge							
	Indirect potable reuse							
	Seawater barrier							
	Geothermal/Energy							
	Other (use type)							
Total:				0	0	0	0	0

CWC 10633(e) ... (Provide) a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

Each UWMP which has recycled water use is required to provide a comparison of earlier projected use of recycled water to actual uses. This is accomplished by completing Table 5-8.

From the urban water supplier's 2010 UWMP, provide the 2015 projected estimates of recycled water use. Compare those estimates to the actual 2015 recycled water use (Table 5-8).

Table 5-8: Recycled water — 2010 UWMP use projection compared to 2015 actual		
Use type	2010 Projection for 2015	2015 actual use
Drop Down Menu		
Total	0	0

Actions to Increase Future Recycled Water Uses

CWC 10633(f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

CWC 10633(g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

Describe the approaches the urban water supplier is implementing or is planning to implement to increase or encourage the use of recycled water within its service area. Summarize them in Table 5-9. These actions may include financial incentives, funding for onsite retrofits for industrial or commercial users, public outreach, demonstration projects, building code modification, ordinances, and etc. Provide estimates of the amount of additional recycled use that could be realized by implementing any of the actions (Table 5-9).

The water agency preparing the UWMP may not be the organization responsible for the treatment or distribution of recycled water in the UWMP service area. However, as the local water supplier, the UWMP preparer should be working with the recycled water purveyor to address opportunities to expand recycled water use, revenue impacts to both agencies, and common benefits. These actions can include working with or supporting the wastewater agencies plant upgrades to increase recycled water use. These actions should be included in Table 5-9.

Recycled Water Master Plan

If the urban water supplier has prepared a recycled water master plan within the past five years, or similar document, that document may be provided to indicate how recycled water is planned to be implemented. Provide a brief summary of the plan within the text of the UWMP and include the document with the UWMP.

Table 5-9: Methods to encourage recycled water use

Actions	Projected Results					
	2015	2020	2025	2030	2035	2040 - opt
Financial incentives						
name of action						
name of action						
Total	0	0	0	0	0	0

If there are limitations on the availability or use of accessible recycled water, provide information regarding the limitations and what could be done to address those limitations.

Fit For Purpose

An additional action that all organizations should consider for increasing recycled water use within the UWMP area is a concept referred to as ‘fit for purpose’ (U.S. Environmental Protection Agency 2012). This concept advocates that waste water that has undergone the most rigorous and energy intensive processes is reserved for uses such as direct human contact or contact with food production. Conversely, less-treated wastewater should be used in other applications, such as agricultural irrigation, as it has been safely used for decades. Greater reuse of less-treated wastewater in agriculture and environmental settings, where additional “natural treatment” can augment wastewater plant treatment, may provide additional opportunities for expanding recycled water use. Finally, water suppliers may determine that more active implementation of ‘fit for purpose’ and having available multiple levels of treated wastewater may support increased integration of recycled water use into their water supply portfolio. Some water agencies are already successfully providing multiple levels of treated wastewater to their customers and implementing the ‘fit for purpose’ concept to meet specific needs of their diverse customer base.

5.6 Desalinated Water Opportunities

CWC 10631(i). Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Describing opportunities for the use of desalinated water is required in a UWMP. Identify and discuss opportunities for development of desalinated water supplies from ocean water, brackish surface water, and brackish groundwater. Indicate the level to which desalination is being considered.

If desalination is currently being implemented (groundwater or seawater), indicate the volume produced in Table 5-1. Agencies may also consider including a description of the source of the water, measures of water quality, such as total dissolved solids (TDS), and any inter-agency coordination.

If the water supplier considers there are no opportunities for development of desalinated water sources within the planning horizon of the 2015 UWMP, the supplier is to clearly indicate that desalination is not being considered and discuss why this is the case.

Enter the expected volumes of desalinated water, if any, into Table 5-1. If brackish groundwater is being desalinated, indicate whether the volume of desalinated groundwater is included in Table 5-1 as groundwater production or desalinated water production and if the reported volume is the extracted or potable volume.

5.7 Exchanges or Transfers

CWC 10631(d). Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

Describe any planned or potential future water exchanges or transfers. The description should include the name(s) of other agencies participating in the transfer or exchange, the volume of water expected to be transferred or exchanged, and a description of the expected time frame, that is, whether is this long or short term and over what time period it is expected to occur.

Enter the expected volumes of transfers and exchanges into Table 5-1.

Transfers

The California Water Code (CWC) defines a water transfer as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water or water rights. Temporary water transfers have a duration of one year or less (CWC Section 1725). Long-term water transfers have a duration of more than one year (CWC Section 1728).

Transfers can be between water districts that are neighboring or across the state, provided there is a means to convey or store the water. A water transfer can be a temporary or permanent sale of water or a water right by the water right holder, a lease of the right to use water from the water right holder, or a sale or lease of a contractual right to water supply. Water transfers can also take the form of long-term contracts for the purpose of improving long-term supply reliability.

Exchanges

Water exchanges are typically water delivered by one water user to another water user, with the receiving water user returning the water at a specified time or when the conditions of the parties' agreement are met. Water exchanges can be strictly a return of water on a basis agreed upon by the participants or can include payment and the return of water. The water returned may or may not be an "even" exchange. Water can be returned on a one-for-one basis or by another arrangement (e.g., for each acre-foot [AF] of water received, 2 AF are returned).

Emergency Interties

Emergency interties are addressed in Chapter 6, Water Supply Reliability.

5.8 Climate Change Impacts to Supply Optional

Waiting for Guidance

5.9 Future Water Projects

CWC 10631(h) ...The urban water supplier shall include a detailed description of expected future projects and programs... that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Identify and describe expected future projects and programs that the supplier may implement to increase their water supply. Include a description of the expected increase in water supply and an estimated timeline for implementation.

Capital improvement projects that do not increase the water supply to the water agency should not be included in Table 5-10.

Table 5-10: Future water supply projects			
Project name	Projected start date	Projected completion date	Expected increase in water supply